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Asian Trade Barriers Against Primary and Processed Commodities

Raed Safadi
and
Alexander Yeats

Tariff escalation to protect domestic industries against more efficient producers is not limited to industrial countries. Protection of domestic industries is also common in Asian developing countries and in intra-Asian trade.

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This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze and predict structural changes in trade and to identify factors affecting developing countries' exports. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Jean Jacobson, room S7-037, extension 33710 (September 1993, 29 pages).

Many developing countries are being encouraged to shift toward increased processing and exports of domestically produced natural-resource-based products now exported in primary form. But in many major import markets, the structure of tariffs and nontariff barriers militate against such efforts.

Zero or low tariffs are generally applied to industrial countries' imports of primary (unprocessed) commodities; duties increase, or "escalate," as the level of processing or fabrication increases. Tariff escalation produces a trade bias against processed goods.

In the past, such trade barrier escalation has been attributed chiefly to industrial countries. Safadi and Yeats examined the structure of restrictions in Asian countries and found that most Asian countries' tariffs incorporated more escalation than do tariffs in industrial countries. Apparently tariff escalation is also often reinforced by nontariff barriers on processed goods, although supporting data for this finding are less firm.

This issue should not be viewed as a North-South issue, contend Safadi and Yeats. A bias against imports of processed goods is built into trade barrier escalation *among* Asian countries and should be addressed in regional initiatives to liberalize intra-Asian trade barriers.

Safadi and Yeats make three recommendations for dealing with escalation issues in multilateral negotiations:

- Japan and, to a lesser extent, the Republic of Korea are the key to successful negotiations on these issues, as they have a far greater import bias against processed commodities than do all other countries with which Safadi and Yeats compare them. That is, Japanese and Korean trade barriers incorporate far more escalation than do trade barriers in other countries studied.

- Disproportionately high cuts in trade barriers for unprocessed commodities are not the solution, as they would increase effective protection for processed goods.

- Any approach to trade liberalization should deal with both tariffs and nontariff barriers, to ensure that a reduction in one type of restriction is not offset by a further tightening in the other. Several Asian countries apply both types of restrictions to commodity imports.

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Asian Trade Barriers Against Primary and Processed Commodities

by

Raed Safadi and Alexander Yeats

Economists,
International Trade Division
International Economics Department
World Bank, Washington, DC 20433

I. Introduction

Theoretical models of the development process and actual plans for industrialization often assign a key role to trade policy measures. Moreover, in addition to the maintenance of steady growth in exports and accompanying increases in foreign exchange earnings, developing countries repeatedly stress the need to reduce their dependence on traditional primary product exports. Among the factors cited as the underlying reasons for this proposed shift are: (1) the purported deterioration in the terms of trade for primary commodities; (2) the substitution of synthetics for many of these items (plastics for metals, artificial for natural fibers, chemical sweeteners for sugar); (3) the instability of primary product prices in international markets; (4) the increased employment opportunities associated with the production and export of manufactures; and (5) the realization of economy-wide linkages and "learning effects" resulting from the processing (manufacturing) function (see Helleiner and Welwood, 1978 or Roemer, 1979).

One method suggested for increasing the proportion of developing countries' trade in fabricated goods is to increase the processing of natural resource-based products now exported in primary form. However, a factor often cited as working against efforts to increase domestic processing is the structure of tariffs and other trade barriers in major import markets. Specifically, zero or low tariffs are generally applied to industrial countries' imports of primary (unprocessed) commodities with the duties increasing, or "escalating", as the product experiences increased fabrication. Tariff escalation has been acknowledged to produce a trade bias against processed goods due to the higher import duties imposed on these items.[1]

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[1]For example, Balassa (1968, p. 195) states that "increases in nominal and effective duties from lower to higher stages of transformation point to the existence of discrimination against the processed export products of developing countries." A similar position concerning the influence of escalating tariffs has been taken by Johnson (1965). Representative studies which document the existence of tariff escalation in developed countries include UNCTAD (1968, 1980) and Yeats (1979). Yeats (1984) argues that a trade bias against processed commodities may occur even when there is no escalation in tariffs because of generally higher import demand elasticities for processed as opposed to primary commodities.

The importance that developing countries attach to trade barrier escalation is reflected in the extensive policy debates on this subject that have occurred in major international forums. For example, developing countries were instrumental in having a plank inserted in the 1982 GATT Ministerial Declaration (p. 16) stating that "prompt attention should be given to the problem of escalation of tariffs on products with a view to effective action toward the elimination or reduction of such escalation where it inhibits international trade, taking into account the concerns relating to exports of developing countries." The Punta del Este Declaration also stated that "negotiations shall aim to achieve the fullest liberalization of trade in natural resource-based products, including those in processed and semi-processed forms. The negotiations shall aim to reduce or eliminate tariff and nontariff measures, including tariff escalation." UNCTAD (1979), Commonwealth Secretariat (1982), World Bank (1981 and 1987) have also viewed tariff escalation as a major problem for developing countries.

While trade barrier escalation has been an important point of contention in the Uruguay Round and previous multilateral trade negotiations (MTNs), the topic's relevance to intra-Asian has not been clearly established. Yet a number of Asian countries like Australia, China, Malaysia, Philippines and Thailand have a major interest in promoting further processing of natural resource products that are now often exported in raw or semi-processed form (see Table 4). However, almost all of the empirical studies that have documented the existence of trade barrier escalation, and the resulting import bias against processed goods, have focused on Japanese, North American and European markets and it has not been established that developing countries' trade barriers follow a similar pattern.[2] Moreover, it has not yet been determined that developing countries' (purported) natural advantage in primary commodity production generally establishes cost differentials of a sort that escalating trade barrier protection is not required for domestic processing industries.

The purpose of this study is to assess the priority that should be assigned to trade barrier escalation in any multilateral liberalization effort involving Asian countries. Employing a commodity processing chain classification scheme developed by the World Bank (see Box 1 for an example of a commodity processing chain), the structure of individual South and East Asian countries' imports is analyzed to determine if a significant trade

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[2]One exception is a study by Laird and Yeats (1987) which showed that tariffs in 23 developing countries or country groups often incorporate a high degree of escalation. However, the major focus of this study was on countries outside the Asian region so it is not directly relevant to an Asian Round.

bias exists against semi-fabricated and processed commodities. Next, using detailed information on trade barriers compiled by UNCTAD and the World Bank an attempt is made to determine if Asian countries' tariffs and nontariff barriers (NTBs) escalate in the same manner, and to the same degree, as developed countries' trade restrictions. The analysis also attempts to identify specific commodity processing chains where liberalization could make an important contribution to Asian intra-trade. The study concludes with an overall assessment of the priorities that should be assigned to trade barrier escalation issues in Asia and also provides several specific suggestions for a regional multilateral liberalization initiative.

II. The Data and Methodology

In this study a World Bank classification scheme was used to identify different levels of fabrication for 48 commodities exported in primary and processed form by Asian developed and developing countries (see Appendix 1 for full details on the components of each stage identified in terms of SITC products). At a minimum, the scheme distinguishes between a primary and processed stage product (i.e., the primary stage of the coffee chain consists of green and roasted coffee beans (SITC 071.1), while the processed stage consists of coffee extracts (SITC 071.2)). In other instances, a semi-fabricated stage or stages are identified (i.e., the cocoa chain consists of cocoa beans (primary stage), cocoa powder and butter (intermediate stages), with chocolate being the final stage item). Table 4 contains a list of commodities covered by this classification scheme, and identifies major Asian country producers and exporters of these products.[3]

Statistics on Asian countries' 1990 imports of each processing chain's stages were drawn from United Nations Series D trade tapes, as were similar data for several earlier years. In a few cases, trade data for individual commodity processing chains were aggregated into broad product groups (e.g., foodstuffs; ores, minerals and nonferrous metals; or energy products) to focus on broad trends in primary and processed products' import

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[3]"Leakages" may occur as one goes up the processing chains since some products may be employed as inputs for production processes which are not a formal part of the chain. For example, cotton fiber may be used for the manufacture of rubber tires and not appear in the textile stages of the cotton chain. Such leakages may cause the magnitude of the shift to processed commodity imports to be understated and may also affect the accuracy of estimates of the escalation in tariffs and nontariff barriers. If trade barriers are lower for products where leakages occur than for goods included in the formal definition of the processing chain, the extent and magnitude of escalation will be overstated.

shares. Due to differences in factors like the level of development, the import structures (and trade barriers) of countries in South Asia, non-OECD East Asia, and OECD Asia are analyzed separately. Table 1 identifies the major exporters in each group while the World Bank (1992, Table A1, p. 40) provides a full listing.

Statistics on Asian countries' trade barriers were drawn from two sources. Tariff data were compiled directly from GATT documents and then computerized and stored in the World Bank-UNCTAD SMART (Software for Market Analysis and Restrictions to Trade) data base. (See UNCTAD-World Bank, 1989 for a description of the SMART system). Information on Asian countries' nontariff barriers was drawn from UNCTAD records and also incorporated in the SMART system. Since the tariff and NTB data were recorded at the tariff line level, available concordances were used to aggregate these data to Standard International Trade Classification (SITC) groups. This procedure allowed the UN trade data to be matched directly with Asian countries' tariff and NTB information.

III. The Commodity Structure of Asian Trade

Three key points should be considered in an assessment of escalation issues: (1) whether Asian countries' imports reflect a major bias against semi-finished and processed products; (2) whether a similar bias is reflected in Asian commodity exports; and (3) whether Asian trade barriers escalate. If these conditions are found to exist, the subject of escalation should be addressed in Asian trade negotiations.[4]

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[4]An important conceptual and empirical issue is how to determine if a bias exists in Asian trade and, if it does, what its magnitude is. In this study, the commodity import structure of the European Community (EC) is sometimes used as a "standard" for comparison. Two points should be noted with regard to this choice. First, Balassa (1968), Yeats (1984) and others argue that a significant bias against processed commodities exists in EC imports and have assessed the influence of contributing factors. Here, any Asian import bias is measured relative to that of the EC. Second, separate tests conducted by the authors show that the overall commodity import structure of the United States is quite similar to that of the EC although there are some differences for several individual commodities (see Box 2 for details). Thus, the conclusions of this study would not differ significantly if the United States rather than the EC were employed as the standard for comparison.

Box 1

Characteristics of SITC-Based Commodity Processing Chains

Although the approach has several recognized imperfections, a number of empirical studies have utilized the Standard International Trade Classification (SITC) system to construct "commodity processing chains" (Balassa 1968, Yeats 1979, Laird and Yeats 1987). These chains trace individual commodities like cocoa and coffee beans, or cotton, jute and iron ore, through successive stages with each experiencing a greater degree of processing than the former. After detailed analysis of the SITC system, the World Bank was able to construct processing chains for 48 different commodities (see Appendix 1 for details). In 1990, the individual components of these chains accounted for approximately 85 percent of all developing countries' exports.

The major advantage of an SITC-based processing chain framework for analysis is that it provides a common basis for merging trade and trade barrier information. That is, the processing chains allow one to tabulate a country's imports or exports of each stage in a given chain and match this information directly with statistics on tariffs and nontariff barriers. The following example shows the three stages of the lead processing chain, Japan's 1990 imports at each stage, as well as Japan's average (unweighted) tariff on each product. Note how the import duties increase or "escalate" as one moves from lead ore to wrought lead alloys.

1990 Japanese Imports			
Processing Stage (SITC)	Value ($mill.)	Share (%)	Tariff (%)
LEAD			
Lead Ore (283.4)	120.3	57.1	0.0
Unworked Lead Alloy (685.1)	87.9	41.7	3.2
Wrought Lead Alloys (685.2)	2.5	1.2	5.8
All Stages	210.7	100.0	

Two specific points should be noted concerning these SITC-based processing chains. First, the level of detail changes from chain to chain due to the nature of the SITC system. That is, several chains like cocoa and wood pulp contain three and four stages while other commodities like coffee or copra only include an unprocessed and processed stage. Second, there is a problem of "leakages" in some chains, *i.e.*, some commodities may be production inputs for items not included in the chain's components and lost from the analysis (see footnote 3 for a specific example). It is acknowledged that the problem of leakages may produce biases in SITC-based analyses of trade barrier escalation.

Table 1 presents summary information on 15 major Asian countries' commodity imports in 1990. The reported data are aggregates of all 48 individual commodity processing chains (see Appendix 1) that have been classified under four broad headings (agricultural materials, foods and feeds, ores and metals, and energy products). The first five columns of the table show each country's imports of all primary and processed stages of the chains while the next five show the share of primary (unprocessed) stage products in total imports. Finally, the individual country results are aggregated into an overall average for Asia (see the memo item) and this information is compared with similar statistics on EC imports.[5]

Overall, Table 1 shows the Asian countries' imports are considerably more biased against processed commodities than those of the EC. This is surprising given that the EC has often been criticized in UNCTAD and GATT for its (purported) bias against processed commodity imports. Approximately 36 percent (by value) of EC commodity imports are composed of primary (unprocessed) stage commodities while the corresponding share in all Asian countries is 16 percentage points higher (52.3 percent). Relatively higher Asian import concentration in unprocessed commodities occurs for all four product groups, but is especially pronounced in ores and metals and agricultural materials where the Asian share is, respectively, two and three times that of the EC. A key related point is that the overall import bias reflected in Table 1 also shows up in Asian intra-trade. Asian countries now export a considerably greater share of processed commodities to non-regional markets than to Asian markets (see Box 2).

Table 1 also reveals considerable variation in individual country results. Japan records the second highest (behind India) overall degree of primary commodity import concentration (62.7 percent of Japan's total

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[5]These overall averages can be affected by an Asian country's natural resource endowments. If, for example, a country has abundant natural resources it might tend to have relatively lower processed good imports, *ceteris paribus*, than countries not so well endowed if resource availability stimulates domestic processing. International transport costs could work toward this end since many bulky low value primary commodities often have relatively high nominal freight costs which may decline significantly with further processing, although this is not always the case (see Yeats 1977). For some commodities like metal ores, stowage factors decline sharply with processing which makes the fabricated product easier to transport. For these reasons there may be a tendency for processing activity to be located close to available supplies of some natural resources. Of course, escalating trade barriers in major international markets would be an offsetting factor. There are some products, however, like wood manufactures that become more fragile or subject to pilferage after processing than the primary commodity input (wood). For such items transport costs may have an insignificant effect on the location of processing activity.

Table 1. The Relative Importance of Asian Countries' Imports of Primary and Processed Commodities in 1990

Importer (Year)	Value of All Primary Stage and Processed Commodities ($million) [a]					Share of Primary Stage Products in Total Imports (%)				
	Foods and Feeds	Agricultural Materials	Ores and Metals	Energy Products	All Commodities	Foods and Feeds	Agricultural Materials	Ores and Metals	Energy Products	All Commodities [b]
South Asia	1,853	1,736	2,389	4,587	10,565	74.3	40.0	23.4	83.6	63.1 (64.6)
India (90)	479	1,135	1,828	3,342	6,785	86.8	50.3	26.0	99.0	70.8 (75.4)
Pakistan (89)	999	319	326	1,144	2,787	72.6	32.0	21.8	37.0	47.4 (44.7)
Sri Lanka (90)	375	282	235	101	993	62.9	7.7	5.9	100.0	54.7 (56.3)
Non-OECD East Asia	18,139	26,840	28,492	32,669	106,139	64.7	36.4	17.6	63.4	43.1 (52.1)
China (90)	3,244	7,098	3,261	952	14,554	83.6	25.8	61.5	44.5	38.2 (54.0)
Hong Kong (90)	5,000	1,479	8,309	2,226	17,014	43.9	7.8	1.7	0.0	16.9 (15.2)
Indonesia (90)	745	1,270	1,381	1,821	5,218	91.5	47.8	7.3	64.4	49.2 (61.9)
Rep. of Korea (90)	2,352	7,342	4,846	8,761	23,301	69.8	53.1	40.2	72.8	57.2 (63.4)
Malaysia (90)	1,207	1,102	1,566	1,227	5,101	71.9	21.3	14.5	13.0	29.2 (32.8)
Philippines (88)	462	392	536	1,051	2,441	73.1	24.2	22.5	91.5	62.1 (62.2)
Singapore (90)	2,464	2,421	2,175	9,486	16,546	48.5	25.6	2.5	73.0	53.2 (46.2)
Taiwan, China (90)	1,632	3,595	3,926	4,310	13,463	69.1	40.4	8.7	73.8	45.3 (56.8)
Thailand (90)	1,033	2,141	2,492	2,835	8,501	94.1	43.2	2.8	53.7	41.0 (57.3)
OECD Asia	26,158	28,860	20,922	33,285	109,232	63.5	30.3	37.6	97.8	60.3 (64.8)
Australia (90)	1,057	2,946	814	1,748	6,566	47.7	4.0	21.0	59.4	27.9 (38.5)
Japan (90)	24,733	25,389	19,555	30,995	100,672	64.3	33.8	39.9	99.9	62.7 (66.7)
New Zealand (90)	367	525	560	542	1,994	53.1	7.4	11.3	100.0	42.1 (54.0)
Memo Item										
European Community (90)	90, 671	104,053	68,534	81,045	344,303	52.7	11.1	12.2	70.6	36.3 (44.5)
All Above Asian Countries	46, 149	57,436	51,810	70,541	225,936	64.4	36.3	25.7	80.0	52.3 (58.7)

(a) See Appendix 1 for the primary and processed stage products classified in each group.
(b) Figures in parentheses show averages based on weights reflecting the individual commodity group's importance in world trade. All other figures are based on the Asian country's own trade weights.

Source: Trade data compiled from United Nations Statistical Office records.

Box 2

Do Asian Processed Commodities Fare Better in Non-Asian Markets?

Tables 1 and 2 show a major Asian import bias exists against processed commodities and, as a result, many Asian countries export a relatively high share of their domestically produced commodities in primary form (see Tables 3 and 4). This observation raises the question of whether the structural bias against Asian processed commodities exists in non-Asian markets and, if so, whether it is greater or smaller than in Asia.

The following tabulations compare the total value of other countries' 1990 imports of primary and processed commodities from Asia and also indicate the share of this exchange which consists of unprocessed goods. To assist in comparisons, the tabulations provide similar statistics on Asian intra-trade, and on trade with selected OECD markets.

Importer	Food & Feeds	Ores & Metals	Agricultural Materials	Energy Products	All Items
	(Value of all imports from Asia - US$ million)				
ALL-ASIA	20,692	21,297	33,575	20,882	96,446
Japan	10,924	7,702	9,534	7,487	35,654
Korea	825	2,372	2,731	2,199	8,128
NON-ASIA OECD	13,742	6,778	26,375	2,929	49,814
U.S.A.	5,826	3,369	11,707	2,637	23,540
Canada	783	395	1,045	18	2,242
Germany	1,563	1,026	2,979	78	5,646
U.K.	1,313	561	2,061	31	3,996
Sweden	152	60	338	--	550
	(Share of primary stage in all imports from Asia - percent)				
ALL ASIA	63.2	25.9	28.5	64.5	43.2
Japan	64.4	53.5	42.8	99.9	63.7
Korea	64.7	26.8	52.7	57.9	47.8
NON-ASIA OECD	52.1	13.5	17.3	75.0	31.2
U.S.A.	43.9	4.1	9.1	76.2	24.5
Canada	47.5	12.9	8.6	98.3	23.7
Germany	56.5	51.1	21.6	77.4	37.4
U.K	47.6	31.1	14.5	--	27.7
Sweden	40.7	30.9	3.7	--	16.9

The above comparisons show Asian processed commodity exports fare considerably better outside the region than in intra-Asian trade. Specifically, 43 percent of all Asian intra-trade consists of primary stage products, a share which is 12 percentage points higher than exports to non-Asian OECD markets.

Why is the share of processed commodities in intra-Asian trade so low? The above tabulations show that Japan's import performance (and to a lesser extent the performance of Korea) has a strong influence on the overall results. Both countries are major commodity importers and both have a clear bias against processed goods (i.e., 64 percent of Japan's total imports consists of primary stage products). This observation attaches special importance to the level and structure of Japanese and Korean trade barriers.

Table 2. Trends in the Relative Importance of Asian Imports of Primary and Processed Commodities: 1970 to 1990

Importing Region	Year	Commodity Group: Foods and Feeds	Agricultural Materials	Ores and Metals	Energy Products	All Commodities
		(value of total imports of primary and processed commodities - US$ million)				
South Asia	1990	1,853	1,736	2,389	4,587	10,565
	1980	1,453	561	1,522	3,251	6,787
	1970	748	281	307	39	1,374
Non-OECD East Asia	1990	18,139	26,840	28,492	32,669	106,139
	1980	7,977	10,532	7,359	26,678	52,546
	1970	1,423	1,358	663	893	4,347
OECD Asia	1990	26,158	28,860	20,928	33,285	109,232
	1980	12,024	19,267	13,080	61,378	105,751
	1970	2,231	4,675	3,311	2,996	13,213
All Above Asian Countries	1990	46,149	57,436	51,810	70,442	225,837
	1980	21,454	30,360	21,961	91,307	165,082
	1970	4,402	6,324	4,281	3,928	18,935
		(share of primary stage in all imports of the group - percent)				
South Asia	1990	74.3	40.0	23.4	83.6	63.1
	1980	33.1	25.3	14.7	13.6	19.0
	1970	62.6	62.3	16.2	0.0	50.5
Non-OECD East Asia	1990	64.7	36.4	17.6	63.4	43.1
	1980	61.6	52.3	16.7	79.0	62.3
	1970	63.1	51.9	15.3	57.4	51.1
OECD Asia	1990	63.5	30.3	37.6	97.8	60.3
	1980	76.9	47.9	56.0	86.4	74.5
	1970	85.0	56.1	70.6	74.0	68.7
All Above Asian Countries	1990	64.4	36.3	25.7	80.0	52.3
	1980	68.2	49.0	40.0	81.6	68.3
	1970	74.1	55.5	58.1	69.5	63.3
Memo Item						
European Economic Community	1990	52.7	11.1	12.2	70.6	36.3
	1980	57.9	16.3	16.3	76.6	51.1
	1970	60.6	25.3	20.7	82.6	46.1

Note: See Table 1 for the countries included in each regional group. Appendix 1 identifies the individual products classified as primary stage items in each processing chain. Source is as for Table 1.

imports are primary stage items), while the Korean average (57.2 percent) is also well above that of other Asian countries. Neither Japan nor Korea figures prominently among important Asian commodity producers (see Table 4). Their combined imports of primary and processed commodities are almost 55 percent of the Asian total. These facts highlight the importance of tariff escalation issues in any multilateral Asian trade liberalization effort.

Since Table 1 shows that the current structure of Asian imports is heavily biased against processed commodities (whether these shipments originate in Asia or elsewhere), an important related point is how this structure is evolving over time. Table 2 addresses this point by tabulating the value of Asian imports of primary and processed commodity imports at ten year intervals over the last two decades and also by showing the share of unprocessed (stage 1) commodities in this trade.[6] The import performance of the European Community for these same goods over the same period is also reported (see memo item).

Between 1970 and 1990 the share of Asian imports of all unprocessed commodities declined by approximately 11 percentage points (from 63 to 52 percent), which is about the same as the decline registered by the EC. In other words, the relative Asian trade bias against processed commodity imports has not narrowed over this 20-year period. This finding accents the need for policy action to identify and remove existing constraints to Asian intra-trade in processed commodities.

Aside from the overall regional trend, several different patterns are reflected within the regional sub-groups. South Asia's import shares for unprocessed agricultural raw materials declined sharply between 1970 and 1980, but this was primarily due to special factors not directly connected with a shift to processed products. For example, India all but discontinued its (previously major) imports of raw cotton while its imports of cotton thread and fabrics remained fairly constant in dollar terms-- this produced the appearance of a shift toward fabricated cotton goods. Historically, India was a major market for Egyptian long-stem cotton -- India's imports averaged 25,000 tons per year in the early 1970s -- but, after developing domestic production of a suitable cotton substitute for spinning fine yarns, its imports of Egyptian cotton declined to an average of less than 3,000 tons per

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[6]One important data problem to be noted is that it was not possible to hold the composition of importing Asian countries constant over the 1970-90 period. The Peoples Republic of China did not report imports or exports to the United Nations prior to 1984 so the group of Asian countries included in the 1970 and 1980 statistics is somewhat different from that for 1990. Tables 1 and 2 rely on trade data reported by individual Asian countries (there are gaps in some country's reporting) while Tables 3 and 4 show imports reported by their trading partners. For this reason it was possible to report a somewhat larger selection of smaller Asian countries like Bhutan, Nepal and the Maldives in the latter tabulations.

year. India also imported major quantities of wheat meal and flour on a temporary basis in the late 1970s and early 1980s for famine relief. These imports were subsequently halted and this caused the unprocessed foods import share to decline by about 40 percent over the period 1970-80. The changes in crude and refined petroleum prices have also affected the inter-temporal comparisons. The fact that petroleum is largely traded in (crude) unprocessed form, coupled with relatively high prices in 1980 and 1990, greatly increased the weight of this commodity chain relative to all others. As a result, the progress that was made in shifting trade in some chains toward semi-finished and processed goods is masked in the overall averages.

In Table 3 the focus of analysis shifts from the import performance of Asian markets to Asia's export experience in primary and processed commodities. The table addresses three questions: (1) how important are primary stage commodities in total exports (including all items whether or not they were classified in a processing chain); (2) which Asian countries are the largest (absolute) exporters of primary commodities, and would therefore potentially experience the largest benefits from a reduction in barriers facing processed goods; and (3) how has the concentration in primary commodity exports changed between 1970 and 1990.

Table 3 reinforces the importance of addressing tariff escalation issues. Primary stage commodities account for at least one fifth of total exports for one half of the 30 listed Asian exporters, while these items comprise at least 15 percent of total exports for 22 of the 30 countries. Australia is the single largest exporter of primary stage commodities with $9.6 billion in trade, while 12 of the 30 Asian countries have total primary commodity exports of $1 billion or more.[7]

A second point to emerge from Table 3 is that primary stage commodities are particularly important for several smaller countries like Brunei, Fiji, Guam and Tonga where export shares range between 43 and 59 percent of total exports. (The share of these exports reaches a high of 73 percent for Papua New Guinea). Furthermore, the share of primary commodities in total exports has actually risen for several of these countries between 1970 and 1990 (e.g., Tonga, Vanuatu, the Maldives). These countries have as much (or even more) stake in negotiating trade barrier escalation issues as do Australia, China, Indonesia or New Zealand whose total absolute

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[7]If China's exports are combined with those of territories on which it has claims, i.e., Taiwan (China) and Hong Kong, its total primary stage commodity exports would be roughly $11.3 billion, or $1.7 billion more than Australia's exports.

Table 3. The Relative Importance of Primary (Unprocessed) Stage Commodities in the Total Exports of 30 Asian Countries: 1970, 1980 and 1990

	Primary Stage Commodities' Share of Total Exports (%)			Country's Share in Asian Exports of All Primary Stage Commodities (%)			Nominal Value of All Primary Stage Commodity Exports ($million)		
Asian Exporter	1970	1980	1990	1970	1980	1990	1970	1980	1990
Australia	28.6	27.4	25.5	23.8	12.6	18.5	1,397	5,784	9,608
China	23.7	25.4	10.5	7.2	10.1	16.7	420	4,628	8,670
Indonesia	61.5	62.6	33.5	14.1	31.5	16.7	829	14,423	8,666
Malaysia	44.5	39.3	18.6	7.6	13.2	11.7	446	6,033	6,101
Thailand	35.6	31.0	18.5	4.4	4.4	7.8	258	2,006	4,050
India	31.9	20.9	14.5	9.9	3.6	4.4	579	1,664	2,291
Taiwan, China	10.5	4.8	3.1	3.0	2.1	4.2	176	947	2,184
New Zealand	14.7	17.0	22.7	3.4	2.1	4.0	200	966	2,090
Philippines	29.7	29.7	16.1	6.2	4.3	2.9	366	1,969	1,508
Rep. of Korea	14.3	4.2	2.2	2.0	1.4	2.4	115	656	1,254
Brunei	93.0	62.9	43.7	1.8	5.7	2.0	106	2,586	1,035
Japan	1.6	0.6	0.3	4.4	1.7	1.9	260	785	978
Papua, New Guinea	68.9	83.1	73.2	0.9	1.9	1.3	51	881	657
Singapore	17.1	4.5	1.6	1.9	1.4	1.2	112	620	626
Pakistan	20.2	18.6	12.6	2.0	0.9	1.1	120	423	595
Sri Lanka	69.9	45.4	21.0	3.6	1.0	0.7	209	469	381
Hong Kong	1.0	1.1	0.7	0.4	0.4	0.6	25	180	322
Bangladesh	na	23.4	17.4	na	0.4	0.6	na	199	295
Fiji	71.4	56.4	50.5	0.8	0.4	0.3	45	166	168
Korea, Democratic Rep.	24.3	6.2	17.3	0.3	0.1	0.3	17	50	131
Myanmar	12.8	33.1	19.7	0.3	0.3	0.2	15	156	98
Guam	33.3	31.2	46.8	–	–	0.1	1	1	29
Maldives	33.3	36.4	36.8	–	–	0.1	2	4	28
Democratic Kampuchea	43.6	28.6	48.6	0.3	–	–	17	2	18
Vanuatu	90.9	56.6	69.2	0.2	–	–	10	17	18
Solomon Islands	37.5	47.4	21.0	0.1	–	–	3	37	17
Mongolia	3.5	29.8	23.3	–	–	–	–	2	16
Tonga	97.3	55.6	58.8	–	–	–	1	5	8
Nepal	27.1	18.4	2.0	0.1	–	–	7	14	5
Kiribati	99.5	66.6	66.6	0.1	–	–	6	4	2

Source: Compiled from United Nation's COMTRADE records using partner country imports.

value of commodity exports is far greater. In short, Table 3 shows conclusively that the potential interest in further Asian processing of primary commodities is spread among a large number of countries.

Table 4 profiles the primary commodities in which each Asian country has an important interest. These tabulations identify the largest exporters, show their share of all shipments of each commodity, and indicate the value of exports originating in South Asia, OECD Asia and non-OECD East Asia. The intention here is to discover how dispersed Asian interests are across regions, commodities and countries.[8] We want to determine whether major exporters have a stake in escalation issues for one or two commodities only, or whether their interests are likely to be spread over a wider range of items.

The general impression from Table 4 is that Asian exporters' interests are dispersed over a fairly large number of commodities. This has positive implications for any multilateral trade negotiations in the Asian region since it creates greater opportunities for trade-offs. Australia and China, for example, rank among the principal suppliers of at least 16 of the 42 commodity chains listed in the table (several relatively unimportant chains like horn and bone have not been included) with China being a factor in 25 chains. India, Indonesia, Papua New Guinea, the Philippines, Malaysia, New Zealand, Taiwan (China) and Thailand are among the largest suppliers of five or more commodities. A further point to note is that Japan, which would play a major role in the negotiations given its prominence as the largest import market for commodities (see Table 1), does not figure as an important primary stage exporter for any of the commodity chains listed in Table 4. This observation accents the need for analysis of the structure of Japan's trade barriers.

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[8]Overall, 70 percent or $38.3 billion of the primary commodity exports originate in East Asian non-OECD countries, 23 percent ($12.9 billion) come from OECD Asia, and 7 percent ($3.9 billion) originate in South Asia. However, these comparisons understate somewhat the true importance of commodities for the latter as these shipments account for roughly 20 percent of all South Asia's exports as opposed to 14 percent of the total exports of non-OECD East Asia.

Table 4. Major Asian Exporters of Primary (Unprocessed) Stage Commodities in 1990

Primary Stage Commodity (SITC)	1990 Asian Exports of the Commodity ($mill.) South Asia	Non-OECD East Asia	OECD Asia	All Asia	Major Asian Exporters (Share of Total Asian Exports -- in percent)
I. Foodstuffs					
Shell fish, fresh (031.3)	792	4,168	681	5,641	China (21), Thailand (19), Indonesia (12)
Fish, fresh or chilled (031.1)	101	2,907	620	3,628	Taiwan, China (26), Korea (19), China (10)
Vegetables, fresh (054)	85	2,218	352	2,655	Thailand (34), China (23), Taiwan, China (12)
Fruit and nuts, fresh (051)	280	1,135	856	2,271	New Zealand (29), Philippines (21), China (13)
Raw beet and cane sugar (061.1)	7	964	757	1,728	Australia (44), Thailand (12), Philippines (7)
Unmilled wheat (041)	–	–	1,159	1,159	Australia (99)
Tea (074.1)	467	506	4	977	China (35), Sri Lanka (25), India (21)
Coffee, green or roasted (071.1)	76	703	2	781	Indonesia (52), Papua New Guinea (16), Thailand (15)
Cocoa beans (072.1)	–	356	–	356	Malaysia (61), Indonesia (22), Papua New Guinea (11)
Live swine (001.3)	–	288	–	288	China (74), Malaysia (26)
Groundnuts (221.1)	5	279	–	285	China (85), Taiwan, China (10)
Soya beans (221.4)	1	207	1	210	China (93), Taiwan, China (2)
Live poultry (001.4)	–	171	3	174	China (55), Malaysia (41)
Live cows and sheep (001.1, 001.2)	1	29	82	112	Australia (63), China (24), New Zealand (10)
Rice in husk (042.1)	36	32	12	80	Thailand (39), India (38), Australia (15)
Copra (221.2)	4	64	–	67	Philippines (37), Papua New Guinea (27)
Palm nuts (221.3)	–	4	–	4	Papua New Guinea (52), Malaysia (45)
Linseed (221.5)	1	–	–	2	India (18), New Zealand (15)
II. Agricultural Materials					
Rubber (231.1, 231.2)	69	3,811	472	4,353	Malaysia (37), Thailand (22), Indonesia (20)
Rough logs (242.21, 242.31)	167	2,768	282	3,217	Malaysia (77), New Zealand (8), Papua New Guinea (4)
Cotton (263.1, 263.4)	815	252	525	1,593	Australia (33), Pakistan (28), India (23)
Wool (262.2, 262.6, 262.8)	13	141	1,172	1,326	Australia (58), New Zealand (30, Malaysia (3)
Hides and skins (211 less 211.8, 211.9)	3	147	736	885	Australia (49), New Zealand (34), China (14)
Raw silk (261.3)	–	488	12	500	China (83), Taiwan, China (8)
Feathers (291.96)	1	366	2	370	China (46), Taiwan, China (34), Hong Kong (9)
Jute (264)	94	27	–	121	Bangladesh (76), China (11)
Horn and whalebone (291.12)	9	17	15	41	New Zealand (37), China (17), India (17)
Flax, hemp and ramie (265.1 to 265.3)	–	18	1	19	China (74), Taiwan, China (16)
Unworked human hair (291.91)	2	8	–	10	China (60), India (20)
III. Ores and Minerals					
Iron ore (281.3)	723	241	2,510	3,474	Australia (72), India (22), Philippines (6)
Copper ore (283.11, 283.12)	7	1,208	192	1,408	Papua New Guinea (32), Indonesia (27), Philippines (21)
Zinc ore (283.5)	1	25	495	521	Australia (95), China (3)
Bauxite ore (283.3)	–	139	214	352	Australia (59), China (28)
Manganese ore (283.7)	15	6	224	246	Australia (91), India (6)
Sand, excluding metal bearing (273.3)	1	40	81	122	Australia (63), China (15)
Tin ore (283.6)	3	59	44	105	China (50), Australia (42), Malaysia (2)
Lead ore (283.4)	1	15	65	81	Australia (80), Thailand (15), Korea (2)
Tungsten ore (283.92)	1	33	5	39	China (77), Australia (13)
Natural phosphate (271.3)	–	12	3	15	China (67), Australia (20), Singapore (7)
Silver ore (285.01)	–	2	–	2	Indonesia (99)
Crude asbestos (276.4)	–	1	–	2	Singapore (50), China (30)
IV. Energy Products					
Crude petroleum (331.01)	74	14,469	1,371	15,914	Indonesia, (36), China (24), Malaysia (23)

Source: Compiled from United Nations' COMTRADE records using re[illegible]ed partner country imports.

Box 3

Can a Trade Bias Against Processed Goods Still Occur if there is no Escalation of Trade Barriers?

For trade negotiations, it is important to distinguish between two points: trade barrier escalation which refers to tariffs and NTBs rising with fabrication, and the influence of these barriers on the structure of trade. To account properly for the latter, one must analyze changing conditions of demand at different levels of processing. Since empirical studies show import demand elasticities normally increase with fabrication, constant tariffs will have relatively larger trade effects on fabricated commodities than on unprocessed commodities.

This point can be clarified through the use of the example cited below. Here, it is assumed that the leather processing chain is composed of three distinct stages (hides, leather and leather manufactures), and import demand elasticities range from 0.6 for hides to over 2.0 for leather manufactures in developed countries. For illustration, it is assumed that the importing country applies a constant 10 percent tariff and imports $20 million in each processing stage. There is no tariff escalation, yet the tariff has more of a retarding effect on leather manufactures due to the more "sensitive" demand for these products. Specifically, reducing the tariff for hides to 5 percent would increase imports by $558,000. A similar cut applied to leather manufactures would increase imports by more than three times this amount. Thus, in assessing the influence of trade barriers, consideration must be given to underlying demand conditions to draw meaningful conclusions about their influence on the trade structure. Stated differently, the escalation of trade barriers is normally a sufficient condition to conclude that an import bias against processed goods exists, but it is not a necessary condition.

Processing Stage	Nominal Tariff	Imports ($ mill.)	Import demand elasticity	Projected Change with a 50% tariff cut ($000)
Hides and skins	10	20	-0.62	558
Leather	10	20	-1.28	1,152
Leather mfg.	10	20	-2.11	1,899

Note: The projected import change is based on the use of a partial equilibrium trade model in which the estimated change in imports is derived from a multiplicative function involving the initial level of imports, the import demand elasticity, and the change in the landed price of the good due to the tariff reduction. See Stern (1976) for a discussion of this type of analysis.

IV. The Structure of Asian Trade Barriers

The analysis to this point has demonstrated that Asian commodity imports reflect a strong bias against processed goods (Table 1), and that the bias against Asian exports of processed commodities is greater in intra-Asian trade than in non-regional markets (Box 2). Furthermore, between 1970 and 1990, Asian markets' import bias showed no evidence of narrowing relative to other markets (Table 2). These facts raise the question of whether, and to what extent, this sub-par performance can be accounted for by escalation in Asian trade barriers.[9]

Table 5 draws on GATT tariff data for 10 Asian countries in order to provide relevant information.[10] The table shows the average import duty each country applies to the primary stage item in the 48 commodity chains, as well as the tariff on the final stage product. Tariff averages have been computed for all 48 commodity chains and their differences are used as an overall measure of escalation for each market.

It is clear from Table 5 that there are major differences in Asian tariff levels, and that tariff escalation occurs in most processing chains. Concerning the first point, GATT records indicate that Hong Kong has no tariffs on any primary or processed commodity (for this reason Hong Kong is not included in Table 5), while Singapore has minor duties of under 4 percent on seven processed commodities (refined petroleum is an exception with a 10 percent tariff). In contrast, tariffs of over 30 percent occur in Australia, Indonesia, Japan, Korea and

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[9]It must be acknowledged that studies have identified numerous other problems besides external trade barriers that developing countries face in trying to increase processing of domestically produced commodities. These include: inappropriate economic policies (import substitution) pursued by the country itself; insufficient access to international capital or technical markets; transnational corporation policies; monopoly pricing practices of liner conferences that may increase freight costs; and anticompetitive practices of established firms in major OECD markets. For a survey of these problems see UNCTAD (1979). It should also be acknowledged that some countries' comparative advantage may be in exporting unprocessed commodities and not in processing these commodities.

[10]The underlying tariff data were compiled by GATT and then recorded in the UNCTAD-World Bank SMART system. No data on China's tariffs were collected since this country currently is not a member of the General Agreement. Due to the magnitude of the effort required to compile matched trade and tariff statistics for a single country -- more than 12,500 tariff line level products may be involved -- GATT did not attempt to compile statistics for several of the smaller Asian countries that are GATT members. UNCTAD's Inventory of Trade Control Measures was the source of information used in this study on nontariff barriers -- see Table 6.

Table 5. Comparison of Asian Countries' Tariffs on Primary and Final Stages of 48 Commodity Processing Chains.

		AUTRALIA		INDONESIA		JAPAN		KOREA		MALAYSIA		NEW ZEALAND		PHILIPPINES		SINGAPORE		THAILAND	
#	Processing Chain	Primary	Final	Primary	Final	Primary	Final	Primary	Final	Primary	Final	Primary	Final	Primary	Final	Primary	Final	Primary	Final
1	Meat of cows, sheep, lamb, goats (1)	1.3	5.9	6.0	43.1	0.0	17.3	12.0	30.7	0.0	8.3	0.0	14.6	10.0	50.0	0.0	0.0	24.0	60.0
2	Swine (1)	0.0	7.9	7.5	48.9	0.0	18.6	20.0	31.1	0.0	8.9	0.0	14.1	10.0	50.0	0.0	0.0	20.0	60.0
3	Poultry (1)	0.0	8.3	7.5	49.1	0.0	18.5	13.3	31.1	5.0	9.0	0.0	14.2	40.0	50.0	0.0	0.0	20.0	60.0
4	Fish fresh, chilled, frozen	0.0	1.0	29.1	46.2	5.5	10.4	20.0	22.4	0.0	36.7	1.2	5.9	20.0	42.0	0.0	0.0	60.0	60.0
5	Shellfish fresh, chilled, frozen	0.0	0.0	30.0	35.0	7.9	8.7	20.0	30.0	26.7	44.3	0.0	42.1	50.0	20.0	0.0	0.0	60.0	60.0
6	Wheat	0.0	8.4	0.0	33.0	20.0	27.2	5.0	30.0	1.3	11.7	0.0	25.0	10.0	40.0	0.0	3.7	0.0	60.0
7	Rice	2.0	2.0	0.0	0.0	15.0	15.0	5.0	5.0	0.0	0.5	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0
8	Fruit	2.0	11.2	30.0	30.0	30.0	24.6	50.0	58.4	0.0	25.0	0.0	19.8	50.0	43.5	0.0	0.0	0.0	60.0
9	Vegetables	2.5	11.0	19.8	23.5	8.6	19.3	37.3	36.3	5.6	17.9	6.7	13.1	40.3	36.1	0.0	0.0	54.8	56.9
10	Sugar	10.0	18.5	10.0	49.0	91.4	27.0	160.0	30.8	0.0	30.0	0.0	12.8	0.0	50.0	0.0	3.3	0.0	60.0
11	Coffee	0.9	2.3	25.0	30.0	0.0	19.7	31.0	41.7	5.0	18.3	10.0	30.0	50.0	50.0	0.0	0.0	0.0	60.0
12	Cocoa	2.0	17.5	10.0	60.0	0.0	30.3	20.0	33.0	30.0	22.8	0.0	26.3	30.0	50.0	0.0	2.0	0.0	60.0
13	Tea	0.0	5.1	30.0	29.9	15.2	21.4	134.5	m	30.0	23.2	0.0	21.7	40.0	44.5	0.0	0.0	60.0	60.0
14	Tobacco	28.8	10.6	15.0	27.2	0.0	48.6	50.0	100.0	0.0	0.0	7.5	20.0	50.0	45.0	0.0	0.0	60.0	60.0
15	Leather	0.0	30.7	3.9	56.4	0.0	22.1	10.3	26.2	3.0	31.5	0.0	27.9	10.0	46.4	0.0	0.5	30.0	89.7
16	Groundnuts	10.0	10.0	30.0	10.0	20.0	8.9	256.2	30.0	0.0	5.0	0.0	6.7	20.0	40.0	0.0	0.0	35.0	0.0
17	Copra	2.0	2.0	5.0	10.0	0.0	9.0	10.0	20.0	5.0	5.0	0.0	21.7	0.0	0.0	0.0	3.0	0.0	0.0
18	Palm nuts, kernels	2.0	0.0	10.0	10.0	0.0	8.0	0.0	21.7	8.0	2.9	0.0	6.7	0.0	0.0	0.0	0.0	35.0	0.0
19	Soya beans	2.0	10.0	10.0	15.0	0.0	7.2	10.0	20.0	0.0	5.0	0.0	6.7	10.0	23.3	0.0	0.0	47.5	0.0
20	Linseed	2.0	10.0	0.0	20.0	0.0	0.0	10.0	25.0	2.0	3.0	0.0	0.0	20.0	23.3	0.0	0.0	35.0	0.0
21	Cotton seed	0.0	10.0	10.0	0.0	0.0	9.9	10.0	20.0	5.0	5.0	0.0	0.0	0.0	40.0	0.0	0.0	35.0	0.0
22	Castor oil seed	0.0	0.0	0.0	20.0	0.0	9.0	10.0	25.0	0.0	3.5	0.0	10.0	0.0	45.0	0.0	0.0	35.0	30.0
23	Rubber	4.9	27.5	5.0	22.4	0.0	2.8	13.3	19.2	11.3	29.9	4.2	27.5	22.4	32.5	0.0	0.5	34.1	40.9
24	Pulpwood	0.0	12.0	15.0	24.6	0.3	2.4	6.3	20.7	20.0	9.9	0.0	24.2	10.0	33.8	0.0	0.0	10.0	36.2
25	Wood	0.0	15.8	15.0	30.0	0.0	10.5	2.4	19.2	17.1	24.3	0.0	22.4	10.0	35.3	0.0	0.0	10.0	50.0
26	Cork	m	8.0	5.0	8.6	m	3.5	m	20.0	m	12.5	m	7.3	m	20.0	0.0	0.0	m	32.0
27	Silk	0.0	33.2	0.0	55.7	6.3	9.9	45.9	20.0	5.0	30.0	0.0	0.0	20.0	40.0	0.0	0.0	10.0	80.0
28	Wool	1.7	26.0	5.0	42.8	0.5	5.7	10.0	24.1	1.4	26.7	0.0	11.8	20.0	42.9	0.0	0.8	30.0	92.9
29	Cotton	0.0	38.2	2.5	55.9	0.0	7.2	5.0	20.6	1.0	27.6	0.0	7.0	10.0	40.9	0.0	0.1	5.0	81.5
30	Jute	2.0	0.0	9.7	26.7	0.4	0.7	10.0	20.0	6.9	2.0	0.0	0.0	20.0	40.0	0.0	0.0	44.4	80.0
31	Flax	2.0	6.3	5.0	8.8	0.2	5.9	10.0	20.0	2.0	2.8	0.0	0.0	0.0	30.0	0.0	0.0	30.0	30.0
32	Phosphate	0.0	2.0	0.0	2.9	0.0	3.4	4.0	20.0	2.0	1.3	0.0	0.0	10.0	8.3	0.0	0.0	15.0	30.0
33	Sand	2.0	12.9	5.0	48.0	0.0	3.5	10.0	25.7	3.5	31.3	0.0	23.1	10.0	42.5	0.0	0.0	15.0	62.8
34	Sulphur	0.0	3.5	0.0	5.9	5.8	3.2	5.0	20.0	2.0	4.8	0.0	0.0	10.0	19.2	0.0	0.0	10.0	30.0
35	Asbestos	0.0	13.8	0.0	6.3	0.0	3.4	10.0	20.0	0.0	7.9	0.0	5.8	25.0	30.0	0.0	0.0	12.5	46.4
36	Iron	2.0	10.2	0.0	4.4	0.0	2.8	1.0	19.9	2.0	6.4	0.0	3.1	10.0	15.5	0.0	0.0	10.0	20.9
37	Copper	2.0	2.0	5.0	8.6	1.9	3.7	5.0	20.0	2.0	2.7	0.0	2.0	10.0	15.7	0.0	0.0	12.0	21.4
38	Bauxite	2.0	16.1	5.0	19.9	0.0	5.1	1.0	20.5	0.0	24.8	0.0	25.5	10.0	23.3	0.0	0.0	10.0	29.8
39	Lead	2.0	2.0	0.0	10.4	0.0	5.8	1.0	20.0	2.0	3.0	0.0	12.5	0.0	20.0	0.0	0.0	0.0	19.7
40	Zinc	2.0	3.2	0.0	10.0	0.0	4.6	1.0	20.0	2.0	5.0	0.0	2.0	0.0	20.0	0.0	0.0	0.0	21.9
41	Tin	2.0	2.0	0.0	9.0	0.0	3.5	1.0	20.0	0.0	5.0	0.0	5.0	0.0	20.0	0.0	0.0	10.0	19.7
42	Manganese	2.0	8.3	5.0	3.2	0.0	2.4	1.0	20.0	2.0	6.0	0.0	1.3	10.0	11.4	0.0	0.0	10.0	0.0
43	Tungsten	2.0	2.0	5.0	5.0	0.0	3.4	3.1	20.0	2.3	2.9	0.0	0.0	10.0	10.0	0.0	0.0	10.0	23.5
44	Silver	2.0	1.8	0.0	25.0	0.0	1.4	13.7	20.0	10.0	6.7	0.0	0.0	50.0	50.0	0.0	0.0	35.0	35.0
45	Horn & whalebone	2.0	18.3	10.0	43.8	0.6	1.8	28.6	20.0	2.4	18.3	0.0	25.3	36.7	37.9	0.0	0.0	35.0	55.9
46	Hair	1.6	m	9.2	m	0.6	m	36.6	m	3.4	m	0.5	m	25.0	m	0.0	m	31.5	m
47	Feathers	1.6	8.1	9.2	32.7	0.6	3.7	36.6	20.0	3.4	35.0	0.5	19.7	25.0	47.8	0.0	0.0	31.5	50.0
48	Petroleum	0.0	0.3	0.0	5.7	3.5	6.3	5.0	15.7	0.0	4.0	0.0	3.9	10.0	22.0	0.0	10.8	25.0	29.2
*	Percentage of chains where escalation occurs.....		71.7		85.1		88.9		86.7		80.4		78.3		78.3		17.0		67.4
*	Average primary and processed stages tariff differences (%).....		7.5		16.3		7.0	(2)	8.8	(3)	9.0		11.5		16.0		0.4		18.7

(1) Excludes tariffs on live animals imported solely for breeding purposes. (2) Excludes the sugar processing chain. (3) Excludes the groundnuts processing chain.
Source: Computed from the World Bank-UNCTAD SMART data base. Average includes chains where both a primary and processed stage were identified.

Malaysia -- Korean import duties actually exceed 100 percent in several processing chains.[11] The importance of these observations is accentuated by the fact that average applied tariffs on processed commodities in the EC (our standardfor comparison) are about 6 percent (Laird and Yeats, 1987), which is less than one third the average duty on Indonesian, Korean or Malaysian commodity imports.

The second important point that emerges from Table 5 is that tariff escalation occurs in most commodity processing chains. In Japan, 89 percent of the processed commodities have higher average applied tariffs than do the primary stage components, and in several cases the spread in duties over a chain exceeds 30 percentage points (e.g., the cocoa and tobacco chains). Overall, the average difference in tariffs on primary and processed commodities is 16 percentage points or more for Thailand and Indonesia and about 12 percentage points for New Zealand. Japan's tariffs increase by 7 percentage points, which is approximately double that for the EC tariffs over the same processing chains.[12] The overall tariff difference for the Republic of Korea (about 9 percentage points) understates the true importance of escalation in most chains due to the perverse results in two chains --vegetables and tea, where relatively high tariffs are applied on the primary stage items. In both cases, nontariff protection may have been substituted for tariffs on the final stage good (see Table 6).

While Table 5 indicates most countries' tariffs escalate sharply, other trade barriers may also contribute to Asia's import bias against processed commodities. Several Asian countries employ nontariff barriers, like quotas, licensing requirements, or variable import levies to control imports. Thus, the presence (or absence) of NTBs over commodity processing chains should be examined to determine if these restrictions generally reinforce Asian tariffs.

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[11] The Japanese rates are "applied" tariffs in that they are the average of the MFN or GSP duty actually paid on imports. The GSP rates may provide developing countries with important margins of preferences for many manufactured goods, but our analysis indicates they are not of major importance for primary or processed commodities. In some cases Australia, New Zealand and other countries that face MFN tarrifs may pay higher tariffs on a few products than indicated by the average rates shown in Table 5.

[12] Yeats (1987 p. 115) provides a cross-country comparison of the degree of escalation in 10 OECD countries' tariffs. Japan's tariffs escalate far more sharply than any of the other countries used as comparators. The increase in Japanese tariffs over commodity processing chains was about three times greater than that for the United States and at least six times greater than that for Norway, Sweden and Switzerland.

Table 6 summarizes available information on nontariff barriers applied by Asian countries on the 48 processing chains. The table indicates the specific types of nontariff measures that Indonesia, Japan, Korea, Malaysia and Thailand use to regulate primary and processed commodity imports. Since Australia, Hong Kong, New Zealand and Singapore appear to make infrequent use of nontariff barriers on either primary or processed commodities these countries are not included in Table 6. Box 4 provides a somewhat different perspective by showing the share of processed commodity imports (in value terms) covered by nontariff measures.

Table 6 shows that Asian NTBs are most highly concentrated in the foods and feeds and agricultural materials sectors. Japan uses eight different types of nontariff barriers to regulate food imports, including variable import levies on sugar, poultry and pork and bovine meat and global quotas on fish and fruit. Related studies estimate that these Japanese nontariff barriers often have *ad valorem* equivalents greater than 100 percent (see Box 4). Other studies reach similar conclusions concerning the importance of Korea's NTBs on a number of food commodity imports (for example, see Anderson 1981). The key point that follows from these observations is that tariffs and nontariff barriers are of sufficient importance that both must be addressed in an Asian multilateral liberalization effort.

V. Summary and Policy Recommendations

While numerous studies have examined trade barrier escalation and its implications in industrial countries, very few related analyses have been undertaken for developing countries. This study undertook such an investigation in order to assess the priority to be given to the issue in intra-Asian trade. After compiling a comprehensive data base on Asian trade, tariff and NTB restrictions, this study examined the structure of these restrictions on primary and processed commodities. Most Asian countries' tariffs were found to be set at high levels and to incorporate greater escalation than industrial countries' import duties. Evidence was also presented that the escalation in the tariffs is often reinforced by nontariff restrictions on processed goods although it was not possible to draw firm conclusions on this point due to the lack of reliable NTB *ad valorem* equivalents.

Table 6. Asian Nontariff Measures Applied to Primary and Final Stage Processed Products in 48 Commodity Processing Chains.

		INDONESIA		JAPAN		KOREA		MALAYSIA		THAILAND	
#	Description	Primary	Final	Primary	Final	Primary	Final	Primary	Final	Primary	Final
1	Meat of cows, sheep, lamb, goats		LI, SP, GQ	TQ	VL		IA				
2	Swine		LI, SP, GQ		VL		IA		CS		
3	Poultry	LI	LI, SP		VL		IA	IA			
4	Fish fresh, chilled, frozen	LI	LI	IA, GQ	IA, GQ	IA	IA				
5	Shellfish fresh, chilled, frozen	LI, SP, GQ	LI	IA, GQ	IA, GQ	IA	IA				
6	Wheat	LI		GQ, SM					CS		LI
7	Rice			GQ, SM	GQ, SM			IA	IA	LI	
8	Fruit		LI, SP, GQ	ST, GQ	TQ, GQ	IA	IA	CS	CS		LI
9	Vegetables	LI	SP, SM	GQ, OIM	TQ, OIM	IA	IA	CS, IA	CS		
10	Sugar			VL		ET, IA		LI	CS	LI	LI
11	Coffee		SP, GQ		GQ	ET		IA			
12	Cocoa				TQ, GQ	ET	ET				
13	Tea		LI, SP, GQ		IA, GQ, SM	IA	ET, IA		CS		
14	Tobacco			SIA				CS	CS		
15	Leather				TQ				CS		
16	Groundnuts		LI	GQ			IA	CS	CS		
17	Copra										
18	Palm nuts, kernels		LI				IA				
19	Soya beans	SM					IA			LI	
20	Linseed										
21	Cotton seed										
22	Castor oil seed										
23	Rubber		SP						CS		LI
24	Pulpwood							IA	CS		
25	Wood							IA			
26	Cork										
27	Silk			SM		IA	IA			LI	
28	Wool	SP	SP						CS		
29	Cotton		SP						CS		
30	Jute	LI, SM		OIM		IA				LI	
31	Flax			IA							
32	Phosphate										
33	Sand						ET		CS, LI		
34	Sulphur								CS		
35	Asbestos								CS, LI		LI
36	Iron		LI, SP, SM						CS, LI		
37	Copper										
38	Bauxite								CS		
39	Lead					IA					
40	Zinc										
41	Tin										
42	Manganese		SP, SM						CS, LI		
43	Tungsten				GQ						
44	Silver										IA
45	Horn & whalebone			IA, GQ					CS		
46	Hair			IA, GQ		IA					
47	Feathers			IA, GQ	GQ	IA	ET		CS		
48	Petroleum				TQ				CS		IA

KEY :

GQ = Global Quota
IA = Import Authorization
LI = Licence
SM = State Monopoly
SP = Selected Purchases
ST = Seasonal tariffs
TQ = Tariff Quota
VL = Variable Levy
ET = Excise Tax
OIM = Other Import Measures
SIA = Sole Import Agency
CS = Customs Surcharges

Source: Computed from the World Bank-UNCTAD SMART data base. No NTBs are recorded for any primary or processed stage import product in Australia, New Zealand and Singapore.

Box 4

The Nature of Nontariff Protection for Processed Commodities

Table 5 shows that some Asian countries' tariffs are higher than those in OECD markets and frequently incorporate greater escalation. However, primary and processed commodities may also face nontariff barriers in Asian trade. GATT records show that while NTBs are applied infrequently to commodity imports by Australia, Hong Kong, New Zealand and Singapore (records for the Philippines are not available), they are widely used in countries like Japan, Korea and Malaysia.

	Share of processed commodity imports covered by nontariff barriers (%)			
Importing Country	Foods & Feeds	Ores & Metals	Agricultural Materials	Energy Products
Indonesia	18.3	6.2	0.4	0.0
Japan	19.8	0.9	0.7	8.2
Rep. of Korea	18.4	0.0	22.2	85.4
Malaysia	23.2	22.3	36.5	52.5
Thailand	11.9	1.3	2.6	22.2

To illustrate this point, the above statistics show the percentage of tariff-line level processed commodities facing nontariff barriers in five Asian markets. In preparing these data, the 48 commodity processing chains were aggregated into four broad product groups. Processed foods are most often subject to NTBs -- these restrictions cover approximately 50 percent of Japan's imports -- but Korea, Malaysia and Thailand frequently apply nontariff measures to energy products (see Table 6 for information on the types of measures used in these markets).

Although information on the trade effects of nontariff barriers is limited, several studies suggest Asian NTBs often convey very high levels of nominal protection. For example, Saxon and Anderson (1982) estimate that Japan's NTBs on primary and processed foods often have nominal equivalents over 100 percent, while ECAFE (United Nations, 1982) reached similar conclusions concerning nontariff protection in other Asian countries. The message from these studies is that nontariff barriers, as well as tariffs, must be addressed in any multilateral liberalization effort. At a minimum, the NTBs should be "bound" to ensure that they cannot be tightened to offset the effects of any tariff cuts that might be achieved in negotiations.

These findings strongly suggest that Asian trade barriers have an important restrictive effect on intra-Asian processed commodity trade. In short, this study demonstrates that trade barrier escalation is an important issue to be addressed in regional initiatives to liberalize trade barriers. The implications are that this problem should not be viewed as a pure South-North trade issue, which was the case in the Tokyo and Uruguay Round negotiations, but must be approached in a broader context. However, related lessons from previous MTNs have important implications for future liberalization efforts. One key point is to ensure that disproportionately high trade barrier cuts are not made for unprocessed (as opposed to processed) commodities since this would work against expanded trade opportunities for processed products.[13] A second message is that negotiations must deal jointly with tariffs and NTBs to ensure that a reduction in one type of restriction is not offset by a further tightening in the other. As an illustration, Laird and Yeats (1989) show that, over the 1966-86 period, industrial countries increasingly used nontariff barriers as a substitute for tariff protection.

The results of this study call into question traditional explanations as to why trade barrier escalation exists. For example, Balassa (1968, p. 195) indicates that trade barriers in the North increase with fabrication to "discriminate against the processed export products of developing countries" and thereby "protect the formers' producers from their more efficient counterparts in the South." However, the fact that Asian developing countries find it necessary to escalate their own trade barriers suggests that alternative or at least, less broad, explanations must be found. As a minimum, the South-North orientation suggested by Balassa must be dropped since tariff escalation to protect domestic industry against more efficient producers is not limited to developed countries.

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[13]This conclusion follows from numerous studies that have analyzed the influence of trade barriers within a theoretical framework known as the "effective protection" concept. Among other points, this concept holds that a proportionately greater reduction in trade barriers for production inputs as opposed to the final (manufactured) product may actually work against trade in the latter since these cuts would lower production costs and actually raise protection for the value added component of the manufacturing process. For a useful nontechnical discussion of the effective rate concept see Grubel (1971). For applications of the effective rate concept see Balassa, *et. al.* (1971) or Finger and Yeats (1976).

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APPENDIX 1

Elements of Primary Commodity Processing Chains Defined in Terms of Revision 1 of the Standard International Trade Classification System

Table A1 provides details on the commodity processing chains which form the basis for this study's empirical analysis. Each individual commodity is classified as falling in the primary, intermediate or final stage of a processing chain. To assist in clearly defining the nature of each item, its Standard International Trade Classification (SITC) Revision 1 number is also given.[14]

A point to note is that chains defined in Table A1 are based on the SITC system and therefore may have certain limitations. One problem is that some of the SITC-based stages define products at too high a level of aggregation with the result that product composition may vary in ways that influence the empirical analysis. For example, the primary and processed stages of the fruit and vegetable chains may contain different proportions of (say) temperate and tropical products so they need not accurately represent a given (well-defined) commodity undergoing increased fabrication. A second problem concerns leakages from the chain. In these cases a given commodity experiences further processing, but is not used as a direct input into the next highest stage item. As a result, analysis of trade changes in a SITC-defined processing chain may understate the actual level of commodity processing and trade by developing countries. Finally, the SITC system may contain some product groups that contain individual items which are at different levels of fabrication. As an example, the vegetable oil stages of the groundnut, linseed, soya bean, copra, and cotton seed chains do not distinguish between crude and refined oils although different levels of processing are involved.

Several of the commodities listed in Table A1 have end uses at the primary or intermediate stages of processing. For these items a processing chain analysis may show little progress in shifting exports to higher levels of fabrication. Soya beans are an example as the primary stage item is a feed product. Vegetables, fruits, fish, and shellfish are other processing chains where a strong consumer preference may exist for the fresh (unprocessed) stage of the product -- a factor that would work against processing (preservation) in exporting countries.

A final point to note is that there may be major differences in the number of stages that are identified for the processing stages listed in Table A1 and this is often due to the nature of the SITC system. For example, several commodities like fruit, vegetables and fish have only a primary and final stage identified as SITC products. This contrasts with the wood (manufactures) chain where a primary stage, two intermediate, and two final stages can be identified. As a result of these differences in detail, it is very difficult to make cross-commodity comparisons of trade at similar levels of fabrication.

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[14]As an example, Table A1 shows that the cocoa chain has three distinct stages with cocoa beans (SITC 072.1) representing the primary stage (unprocessed) product. Cocoa powder (SITC 072.2) and cocoa butter (072.3) are two items classified in the next highest stage of processing, while chocolate (SITC 073) represents an even higher level of processing activity. For products like wood manufactures it is possible to identify five different levels of commodity fabrication although some other chains, like petroleum, have only a primary and processed stage.

Table A1. Elements of the World Bank's Commodity Processing Classification Scheme

Processing Chain	Primary stage product (SITC)	Intermediate product(s) (SITC)	Final stage product(s) (SITC)
I. FOODSTUFFS AND TOBACCO			
Pig meat	Live swine (001.3)	Fresh or frozen pork (011.3)	Preserved pork (021.1, 013)a
Poultry	Live poultry (001.4)	Fresh or frozen poultry (011.4, 011.81)	Prepared or tinned meat (013)a
Meat of Cows, sheep or goats	Live cattle, sheep or goats (001.1, 001.2)	Fresh or frozen beef or mutton (011.1, 00.2)	Meat tinned or smoked (012 less 012.1, 013)a
Fish other than shellfish	Fresh or frozen fish (-031.1)	none identified	Salted or preserved fish (031.2, 032.01)
Shellfish	Fresh or frozen shellfish (031.3)	none identified	Prepared or preserved shellfish (031.02)
Wheat	Unmilled wheat (041)	Wheat meal or flour (046)	Bread or biscuits (048.41)
Rice	Rice in husk or husked (042.1)	none identified	Rice glazed or polished (042.2)
Fruit	Fresh fruit (051)	none identified	Preserved fruit (053)
Vegetables	Fresh vegetables (054)	none identified	Preserved vegetables (055)
Coffee	Green or roasted beans (071.1)	none identified	Coffee extracts (071.3)
Cocoa	Raw or roasted beans (072.1)	cocoa powder and butter (072.2, 072.3)	Chocolate (073)
Tea	Tea (074.1)	none identified	Tea extracts (099.02)
Sugar	Raw beet and cane sugar (061.1)	Refined sugar (061.2)	Flavored sugar and sugar candy (062)
Groundnuts	Groundnuts (221.1)	none identified	Groundnut oil (421.4)
Copra	Copra, excl. flour and meal (221.2)	none identified	Coconut oil (422.3)
Palm nuts and kernels	Palm nuts and kernels (221.3)	none identified	Palm kernel oil (422.4)
Soya beans	Soya bean excl. flour (221.4)	none identified	Soya bean oil (421.2)
Linseed	Linseed excl. flour (221.5)	none identified	Linseed oil (421.2)
Cotton seed	Cotton seed excl. flour (221.6)	none identified	Cotton seed oil (421.3)
Castor seed	Caster seed excl. flour (221.7)	none identified	Castor oil (422.5)
Tobacco	Unmanufactured tobacco (121)	none identified	Cigars, cigarettes, etc. (122)
II. AGRICULTURAL MATERIALS			
Wood	Rough logs (242.21, 242.31)	Logs roughly square (242.22, 242.32)b	Plywood and veneer (631.1, 631.2)b
		Lumber sawn and planed	Wood manufactures (632)c
Cork	Cork unworked (244.01)	Cork simply worked (244.02)	Cork manufactures (635)
Paper-pulpwood	Pulpwood (242.1)	Woodpulp (251.2, 251.6, 251.7, 251.8)	Paper (641.1 to 641.4, 641.7, 641.9)b
			Paper articles (641.1 to 642.3, 642.9)c
Rubber	Natural and synthetic rubber (231.1, 231.2)	Unvulcanized rubber (621.01 to 621.03)b	Tires, tubes and belts (629.1, 629.4, 655.45)d
		Vulcanized rubber (621.04 to 621.06)c	Rubber clothing (841.6)d
Leather	Hides and skins (211 less 211.8, 211.9)	Bovine and sheep leather (611.3, 611.4, 611.91, 611.92)b	Leather belting (612.1, 612.2, 612.9)d
		Chamois and parchment leather (611.93, 611.94)c	Leather clothing (841.3, 851.02)
Feathers	Feathers (291.96)	none identified	Feather goods (899.26, 899.92)
Horn and whalebone	Horn and whalebone (291.12)	none identified	Carved horn and whalebone (899.15)
Hair	Human hair (291.91)	none identified	Human hair worked (899.94)
Silk	Raw silk (261.3)	Silk yarn and thread (651.1)	Silk fabrics (653.1)
Jute	Raw jute (264)	Jute yarn (651.9)	Jute fabrics (653.4)
Wool	Wool greasy (262.1)b	Combed and carded wool (651.21, 651.22, 651.25)	Wool fabrics (653.21, 653.22)d

Table A1. Elements of the World Bank's Commodity Processing Classification Scheme and Sources of Unit Value Information

Processing Chain	Primary stage product (SITC)	Intermediate product(s) (SITC)	Final stage product(s) (SITC)
	Wool degreased (262.2, 262.6, 262.8)c		Wool blankets (656.61)d
Cotton	Raw cotton (263.1)b	Cotton yarn (651.3, 651.4)	Cotton fabrics (652.11 to 652.13, 652)d
	Cotton combed and carded (263.4)c		Cotton blankets (656.62)d
Flax, hemp and ramie	Raw flax, hemp and ramie (265.1 to 265.3)	none identified	Flax, hemp and ramie yarn (651.5)
III. ORES, MINERALS AND METALS			
Phosphate	Natural phosphate (271.3)	Phosphoric esters (512.63)	Phosphoric acid (513.35)d
			Phosphate fertilizer (561.2)d
Sulphur	Sulphur (274.1)	Esters and purified sulphur (512.61, 513.2)	Sulphuric acid and compounds (513.33, 513.42)
Asbestos	Crude Asbestors (276.4)	none identified	Asbestos fiber and material (661.83, 663.8)
Glass	Sand excl. metal bearing (273.3)	Glass in mass (664.11, 664.13, 664.3)b	Safety or construction galss (664.5 to 664.7)d
		Glass surface ground (664)c	Glass manufacatures (664.91 to 664.93, 665.1, 665.2)d
Iron	Iron ore (281.3)	Pig iron (671.2)b	Iron and steel plate (674.1 to 674.3)d
		Iron wire and rod (673)c	Iron strip, rails, wires (675, 676, 677)d
Manganese	Manganese ore (283.7)	none identified	Fenno-manganese (674.1)
Copper	Copper ore (283.11, 283.12)	Copper unrefined (682.11)b	Copper bars, wire, plate (686)
		Copper refined (682.12, 682.13)c	
Nickel	Nickel ore (283.21, 283.22)	Unwrought nickel (683.1)	Nickel bars and sheet (683)
Bauxite	Bauxite ore (283.3)	Aluminum oxide (513.65)b	Aluminum bars, plate, wire (684.2 less 684.24)
		Unwrought aluminum (684.1)	
Lead	Lead ores (283.4)	Unwrought lead (685.1)	Lead bars, plate, wire (685.2)
Zinc	Zinc ores (283.5)	Unwrought zinc (686.1)	Zinc bars, plate, wire (686.2)
Tin	Tin ores (283.6)	Unwrought tin (687.1)	Tin bars, plate, wire (687.2)
Tungsten	Tungsten ore (283.92)	none identified	Tungsten (689.41)
Silver	Silver ore (285.01)	Unworked silver (681.1)	Rolled silver (681.12)
IV. PETROLEUM			
Petroleum	Crude Petroleum (331.01)	none identified	Gasoline, kerosene, fuels (332.1/2. 332.3/4)

a SITC 013 (preserved meat) may contain other meats that do not strictly belong in the preserving chain.
b Of the two products shown in this stage of the chain this item is less processed and may be a production
c This item is considered to be the more highly processed of the two in the same stage of the processing chain.
d The items in this stage of the processing chain are classified as having similar levels of fabrication.

APPENDIX 2

Do Asian Countries Have a Comparative Advantage in Processing Natural Resource Products

The previous analysis established three points relating to the priority that trade barrier escalation should receive in any Asian multilateral liberalization initiative. First, primary commodities constitute a relatively high share of many Asian countries' exports. Second, Asian imports are biased against processed products; in fact, processed Asian commodities fare considerably better in non-Asian markets than in intra-trade. Third, some important Asian countries, like Japan and Korea have relatively high tariffs that escalate sharply. A further important consideration that has not yet been addressed is whether Asian countries have a comparative advantage in processing primary commodities.

Economists have employed the "revealed" comparative advantage concept to answer questions of this sort. Stated simply, the revealed comparative advantage (RCA) of country i in product j is measured by the item's share in the country's total exports relative to its share in world trade. That is, if x_{ij} is the value of country i's exports of j, and X_{ij} is the country's total exports, its revealed comparative advantage index is,

$$RCA_{ij} = (x_{ij}/X_{ij})/(X_{iw}/X_{tw}),$$

where the w subscripts refer to world trade totals. The index RCA_{ij} has a simple interpretation. If it takes a value of less than unity (which indicates that the share of product j in i's exports is less than its share in world trade) this implies that the country has a revealed comparative disadvantage in the product. Similarly, if the index exceeds unity this implies that the country has a revealed comparative advantage in the item. (See Balassa (1965) for a discussion of the properties of this index).[15]

[15]One potential problem is that the measure can be influenced by other countries' trade barriers. If markets with which a given country has a strong tendency to trade have relatively high tariffs and NTBs, this could cause the RCA index to incorrectly indicate the lack of a revealed comparative advantage. Another potential problem is that the index can be biased by inappropriate economic policies. For example, a national strategy of import substitution could cause the RCA index to depart from its pattern under a "neutral" trade regime.

Table A2. Asian Countries' Revealed Comparative Advantage in Processing Primary Commodities

	Processed Commodity Group			
Exporter	Foods and Feeds	Agricultural Materials	Ores and Metals	Energy Products
Australia	0.75	0.55	1.91	0.42
China	1.00	2.16	0.42	0.46
India	0.56	3.39	0.43	0.99
Indonesia	1.21	5.51	0.44	2.23
Malaysia	3.07	1.24	0.37	0.52
Thailand	3.86	1.29	0.20	0.19
Taiwan, China	0.60	1.46	0.49	0.05
New Zealand	0.95	0.54	1.19	0.39
Philippines	4.24	1.44	0.88	0.38
Rep. of Korea	0.64	2.75	1.14	0.37
Brunei	0.00	0.01	0.01	1.62
Japan	0.12	0.65	1.19	0.12
Papua New Guinea	3.52	0.47	0.09	0.01
Singapore	0.71	0.38	0.20	6.40
Pakistan	0.28	6.17	0.00	0.11
Sri Lanka	0.50	1.21	0.06	0.42
Hong Kong	0.39	3.56	0.11	0.07
Bangladesh	0.25	2.65	0.12	0.62
Fiji	5.96	2.46	0.01	0.25
Korea Dem. Rep.	0.89	0.29	4.96	0.54
Myanmar	0.59	0.19	0.16	0.21
Guam	0.55	0.17	0.53	1.59
Maldives	15.04	0.01	0.10	0.01
Kampuchea, Dem.	0.30	0.10	0.03	0.00
Vanuatu	0.10	0.19	0.00	0.00
Solomon Islands	11.19	0.01	0.04	0.00
Mongolia	0.04	3.34	0.46	0.00
Tonga	1.66	0.54	0.00	0.00
Nepal	0.82	0.32	0.01	0.00
Kiribati	0.28	0.00	0.00	0.00
Memo Item				
No. of countries With RCAs over unity	10	14	5	4

Source: Computations based on 1990 trade data drawn from United Nations Statistical Office COMTRADE records. Table A1 identifies the specific processed commodities included in each of the above product groups.

Table A2 shows 1990 revealed comparative advantage indices for 30 Asian countries' exports of four groups of processed commodities, namely, foods and feeds, agricultural materials, ores and metals, and energy products (see Table A1 for a list of the processed commodities in each group). Overall, 25 of the 30 countries had a revealed comparative advantage in at least one of the four groups -- a point that should indicate broad-based interest in escalation issues. Almost half of the countries (14 out of 30) have a revealed comparative advantage in processed agricultural materials, with 10 countries also having RCAs above unity for processed foods. Seven have a revealed comparative advantage in at least two of the four product groups, with Indonesia recording a comparative advantage in every group except processed ores and metals.

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